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# Precision Agriculture: Taking to the Air to Care for the Land

**Background**

Robert Blair is a fourth-generation farmer on land designated by the Idaho State Historical Society as a century farm, meaning the same family has been farming that parcel of land for at least one hundred years. While Blair learned many valuable lessons from the agriculture expertise of his family, he also realized that the 21st Century provides new techniques and technologies to enhance his ability to monitor and care for his crops.

Similar to other farmland around the country, certain terrain on Blair's farm isn't accessible when wet. Because they are so familiar with their land and crops, farmers rely on sight to diagnose many problems in the fields and timeliness is key. When a farmer can't see their fields, the impact can be significant. Regular access to their land without limitations gives farmers critical real-time data to analyze and react quickly, enabling them to make informed decisions and achieve better results while saving time and money in the process. Whether its line of sight challenges, weather conditions or other limitations, Blair needs consistent scouting information to make better management decisions.

Precision agriculture not only improves decision-making, it keeps farmers connected to their land regardless of conditions. Through a variety of technology, precision agriculture farmers collect data on various aspects of their operations to analyze and optimize the entire operation. One of the first tools used in precision agriculture was personal data assistants (PDAs). Then Blair became the first farmer in the country to use an unmanned aerial vehicle (UAV) to collect data and aerial images of his crops, advancing the entire concept of precision agriculture. Since that first flight in 2007, Blair has been working hard to educate others on the benefits and practicality of this evolving approach to farming. Technology has also become more advanced, spawning the use of autosteering, Autoboom™ and yield monitors.

**Approach**

Since his entrance into the precision agriculture world in 2003 with just a PDA for mapping, Blair has come a long way. He started paying to have a pilot with an infrared camera fly over his fields and take pictures in 2004. Blair quickly realized that the aerial information, paired with data from the yield monitor, was the missing piece in precision agriculture.

Blair hedged his bets and purchased a UAV in 2006, becoming the first farmer in the country to own and use a UAV. After becoming familiar with the operations and software, Blair started flying the UAV for real data collection in 2007 with a fixed-wing UAV. The UAV flies over the field and takes photographs. The photographs are then stitched together with software on the computer, producing a complete visual of the entire field. Blair then uses those photographs to analyze his crops, allowing him to locate and diagnose problem areas or spots that need a little extra attention.

The photos, combined with the data from the yield monitor and Blair's intimate knowledge of his fields, provide a much better tool for optimizing the farming operation than solely by walking or driving the fields. Blair uses that data to relay valuable information to the crop duster pilots, allowing them to specifically target areas and use their payload more efficiently.

Looking beyond his own operations, Blair was also instrumental in setting up the precision agriculture lab at the University of Idaho in Moscow, Idaho. His valuable insight and "from-the-ground-up" experience gives the students the tools necessary to learn the ins and outs of the precision agriculture process.

Since beginning the UAV flights in 2007, Blair has since built his own UAV, a quad-copter, and purchased an additional multi-rotor UAV. He is a worldwide leader in precision agriculture and is often invited to speak at conferences, trade shows or on missions around the globe.

**Results**

With the aerial images, Blair is now able to be a better steward by addressing specific issues and problems in a timely manner. Blair's UAV results provide him the opportunity to obtain and analyze real-time data, allowing him to apply the proper nutrients and pesticides quickly and more effectively. He has also reduced fertilizer costs by 20% by using the quantified data from the yield monitor to apply the fertilizer in the most productive and precise way.

For his work and success in precision agriculture, Blair has spoken and traveled all around the world, both learning about and teaching precision agriculture techniques and theories to farmers, agribusinesses and researchers. He has also been awarded multiple distinctions, including the following accolades:

- 2009 International Precision Farmer of the Year (from Precision Agriculture Institute)
- 2010 Eisenhower Fellowship (taking him to Uruguay on a precision agriculture mission)
- 2012 McCoy Fellowship (taking him to Germany, Australia and the Netherlands to speak at conferences)
- 2013 Governor's Award for Agriculture Innovation (Larry Brannen Idaho Agriculture Summit)

Since his emergence into the UAV scene in 2007, Blair has seen a drastic increase in farmers' interest and usage of UAVs in precision agriculture. He notes the increase in UAV presence at agriculture conferences, saying, "In 2007, I was the only one with a UAV at a large agriculture conference in Illinois, and nobody knew anything about UAVs. This year there were six UAV vendors at the conference." His presentation at that Illinois agriculture conference was one of the most attended, causing every seat to be filled and standing room three people deep in the back of the room.

Blair's ultimate goal, as with all farmers, is to leave the land better than he received it. UAVs allow him to manage and care for the land in the most efficient way so that the next generation of farmers can thrive. Blair says, "Agriculture has a tremendous challenge and responsibility to not only feed a growing world population, but to do it responsibly. Technology like UAVs allows us to do that."

**More Information**

For more information on Robert Blair and Three Canyon Farms, please visit:

- www.threecanyonfarms.com
- http://theunmannedfarmer.blogspot.com
- https://www.facebook.com/precisionfarmer
- http://www.americasheartland.org/episodes/episode_712/crop_cam.htm
- http://www.youtube.com/user/UnmannedFarmer?feature=mhee
- http://www.flickr.com/photos/blairfarms